

Amendments to the Claims

The following Listing of Claims replaces all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (currently amended): A device, comprising:

an input bonding pad and an output bonding pad each having a respective length less than one-quarter of a target wavelength corresponding to a target operating frequency, a respective characteristic impedance less than a target source impedance, and a respective reactive impedance that is capacitive up to at least the target operating frequency;

an input microstrip line and an output microstrip line each respectively having a respective length less than one-quarter of a the target wavelength corresponding to a target operating frequency, a respective characteristic impedance greater than a the target source impedance, and a series inductance at a respective reactive impedance that is inductive up to at least the target operating frequency; and

an electro-absorption modulator having a signal electrode with a length less than one-quarter of the target wavelength, a characteristic impedance less than the target source impedance, and an equivalent circuit of a shunt capacitorance at the target operating frequency;

wherein the input microstrip line is connected between the input bonding pad and the electro-absorption modulator, the output microstrip line is connected between the output bonding pad and the electro-absorption modulator, and the input bonding pad, the output bonding pad, the input microstrip line, the output microstrip line, and the electro-absorption modulator have an equivalent circuit of are incorporated into a distributed low-pass filter transmission line circuit having a characteristic impedance substantially matching the target source impedance at the target operating frequency.

Claim 2 (canceled)

Claim 3 (currently amended): The device of claim 21, wherein the series inductances of the input and output microstrip lines, the ~~input and output~~ shunt capacitances of the input bonding pad and the output bonding pad, and the shunt capacitance of the signal electrode are selected to match the distributed low-pass filter transmission line circuit to the target source impedance at the target operating frequency.

Claim 4 (currently amended): The device claim 21, further comprising a transmission line stub connected in parallel with the output bonding pad and having a length less than one-quarter of the target wavelength and a reactive impedance that is capacitive up to at least the target operating frequency, wherein the transmission line stub, the input bonding pad, the output bonding pad, the input microstrip line, the output microstrip line, and the electro-absorption modulator have an equivalent circuit of a distributed low-pass filter transmission line circuit having a characteristic impedance matching the target source impedance at the target operating frequency~~output shunt capacitance comprises an output bonding pad connected in parallel with a shunt capacitor.~~

Claim 5 (currently amended): The device of claim 1, wherein the reactive impedances of the input microstrip line and the output microstrip line (24) compensate for the impedances of the input bonding pad (18), the output bonding pad (22), and the electro-absorption modulator (12) so that the transmission line circuit (10) matches the target source impedance~~has a series inductance providing peaking of the characteristic impedance of the low-pass filter transmission line circuit~~ near the target operating frequency.

Claim 6 (original): The device of claim 1, wherein the signal electrode of the electro-absorption modulator has a distributed traveling wave structure comprising multiple spaced-apart signal electrode segments connected in series, with each pair of signal electrode segments being connected by a respective microstrip line.

Claim 7 (currently amended): The device of claim 6, wherein each signal electrode segment has a length less than one-quarter of the target wavelength, a characteristic impedance less than a target source impedance, and a reactive impedance that is capacitive up to at least~~shunt capacitance~~ at the target operating frequency.

Claim 8 (currently amended): The device of claim 6, wherein each microstrip line connecting the signal electrode segments has a length less than one-quarter of the target wavelength, a characteristic impedance greater than a target source impedance, and a reactive impedance that is inductive up to at least series inductance at the target operating frequency.

Claim 9 (currently amended): The device of claim 6, wherein the signal electrode segments are formed on respective electrically conducting regions of a layer electrically isolated from each other by electrically insulating regions of the layer.

Claim 10 (original): The device of claim 1, wherein the target source impedance is 50 ohms.

Claim 11 (original): The device of claim 1, wherein each microstrip line includes an electrically insulating layer disposed between electrically conducting layers.

Claim 12 (original): The device of claim 1, wherein the signal electrode is formed on a ridge structure.

Claims 13-20 (canceled)

Claim 21 (new): The device of claim 1, further comprising an input bonding wire connected between a signal source and the input bonding pad, and an output bonding wire connected between a termination load and the output bonding pad,

wherein the signal source, the termination load, the input bonding wire, the output bonding wire, the input bonding pad, the output bonding pad, the input microstrip line, the output microstrip line, and the electro-absorption modulator form a distributed low-pass filter transmission line system that is impedance-matched up to at least the target operating frequency.

Claim 22 (new): The device of claim 1, wherein the target operating frequency is a highest electrical signal frequency specified for a product incorporating the device.